Claims 7-8, 11, 23 and 26 stand objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 1-6, 9-10, 12-22, 24-25 and 27-30 stand rejected under 35 U.S.C. 102(b) as being considered to be anticipated by Scepanovic.

Claim 1 includes the limitations

> identifying partial feasible routing solutions corresponding to each of a subset of a set of wires to be routed;
> merging the partial feasible routing solutions to identify one or more feasible routing solutions for the set of wires to be routed.

(Claim 1)(emphasis added).

As discussed in the prior response, applicants respectfully submit that Scepanovic does not teach the claimed features of applicants' invention including at least identifying partial feasible routing solutions and merging the partial feasible routing solutions to identify one or more feasible routing solutions for a set of wires to be routed.

As discussed previously, Scepanovic discloses a method of producing a placement of cells for an integrated circuit. A placement determines the locations of cells within a layout.

As is well-known in the art, placement (as disclosed in Scepanovic) and routing (as set forth in claim 1) are different activities. Placement determines the locations of cells, while routing determines the path for interconnects between cells after their location has been determined during placement. In other words, once a placement has been produced, using the approach described in Scepanovic or another approach, and the locations of cells are fixed, then a

routing solution for interconnects between the placed cells may be determined during global and/or detail routing passes that follow placement.

Examples of publications that demonstrate this well-known distinction between placement and routing can be found, for example, at http://www.cs.caltech.edu/~andre/courses/EDA/slides/day14_6up.pdf , and at http://www.ceis.rochester.edu/ceis/mdc/news/data/Conference_Jan2002/MDC_Madden.pdf (see e.g. slides 8 and 22).

As clearly stated in the abstract of Scepanovic, Scepanovic discloses a method of producing a placement of cells for a micro-electronic integrated circuit. The approach disclosed in Scepanovic includes constructing a hierarchical cluster tree in which a lowest level of the tree includes clusters of interconnected cells and each successively higher level includes clusters of interconnected clusters from a successively lower level. Clusters in each level are merged by a min-cut operation. Clusters of each successively lower level are then placed within clusters of each successively higher level in progressively decreasing order of levels. Clusters are placed in each level by computing a current gravity point for each cluster in accordance with the cells therein, computing a new gravity point for each cluster in accordance with the current gravity points and the interconnects, and moving each cluster from the current gravity point to the new gravity point. Cells within clusters of the lowest level are then placed by calculating positions of the cells in a row direction, and placing the cells in columns in increasing order of the calculated positions in the row direction. (Scepanovic, Abstract.) Details of this approach are shown in Figures 2-10.

Using this approach, Scepanovic determines a location for cells.

In contrast, claim 1 sets forth an approach for routing interconnects between cells. Routing, as is well-known in the art, is a process that determines a particular path out of a plurality of possible paths between a source and a sink/destination terminal on cells that have already been placed, i.e. cells whose locations have previously been determined or fixed. Determining routing solutions, therefore, involves determining possible paths for an interconnect to follow. An example of this definition can be found, for example, at http://www-classes.usc.edu/engr/ee-s/550/material_covered/Detail-Routing-Algorithms.pdf at slide 1.

In particular, claim 1 sets forth an approach including identifying partial feasible routing solutions for a wire to be routed. In this context, a wire to be routed is to be routed between two predetermined points (as is well-known in the art) and the partial feasible routing solutions comprise the various ways that the wire can be routed between those two predetermined points. This definition is set forth clearly in the accompanying specification at, for example, page 4, lines 16-19 where the example is given of wires to be routed between points X and X', Y and Y', and Z and Z'. If these points were not fixed or predetermined, it would be impossible to determine a route corresponding to these points.

In contrast, there is no teaching or suggestion in Scepanovic, however, of an approach, once the placement has been determined, for identifying partial feasible routing solutions and/or for merging those partial feasible routing solutions as set forth in claim 1. While Scepanovic discloses that cells are

interconnected, these interconnections merely indicate that the cells are connected together and not the particular route for the interconnection. Where Scepanovic discusses different ways of interrelating cells, the different approaches merely relate to changes in cell placement and/or different orders in which to chain together a group of cells and not to a variety of ways to route a wire between two given points. (See e.g. Scepanovic, col. 6, line 41 – col. 7, line 20).

It is stated in the Office Action at page 4 under *Response to the applicant remarks*, that the features upon which applicants rely to distinguish the claims vs. Scepanovic are not recited in the rejected claim(s) and that therefore, Scepanovic reads on the claimed limitations. It is further stated that Scepanovic identifies five levels of clusters for interconnecting/routing (fig. 9); that is identifying partial feasible routing solutions, then Scepanovic teaches merging partial feasible routing solutions (fig 7a-c) for wires to be routed by system fig. 2.

Applicants respectfully submit that claim 1 is clearly distinguished over Scepanovic as presented and further clarification is not necessary to make such a distinction. Claim 1 sets forth determining partial feasible routing solutions and merging partial feasible routing solutions. Scepanovic, as described above, does not teach or suggest an approach for determining various routing solutions or paths between two cells much less for determining partial feasible routing solutions or for merging such partial feasible routing solutions. Because routing as set forth in claim 1 and placement as described in Scepanovic are distinctly

different processes as is well-known in the art, Scepanovic cannot be considered to anticipate claim 1.

Applicants further submit that characterizing Scepanovic as teaching determining partial feasible routing solutions is improper. The areas of the specification pointed to in the Office Action are clearly concerned with placement and not routing. For example, Figure 9 that is described in the Office Action as teaching "five levels of clusters for interconnecting/routing" instead shows "progressive placement of the clusters in each level" (Col. 10, lines 23-24, emphasis added). A cluster is defined at col. 5, lines 35-37 as being formed of cells and cells are defined at col. 3, lines 55-58 as being a single logic element, such as a gate, or several logic elements that are interconnected in a standardized manner to perform a specific function.

For at least the foregoing reasons, Scepanovic cannot properly be considered to teach identifying partial feasible routing solutions or merging partial feasible routing solutions as set forth in claim 1. Nor does Scepanovic suggest such features. There is no indication in Scepanovic of identifying more than one route for a wire between two given points.

Independent claims 9, 15, 20, 22 and 27 each include limitations similar to those argued above in reference to claim 1. Claims 2-8, claims 10-14, claims 16-19, claim 21, claims 23-26 and claims 28-30 depend from and further limit claims 1, 9, 15, 20, 22 and 27, respectively, and thus, should also be found allowable for at least the same reasons.

Further, Scepanovic also does not teach or suggest the features of claims 2-30 that are related to routing and not discussed above.

Applicants respectfully submit that the applicable objections and rejections have been overcome and claims 1-30 are in condition for allowance. If the examiner disagrees or believes that further discussion will expedite prosecution of this case, he is invited to telephone applicants' representative at the number indicated below.

If there are any charges, please charge Deposit Account No. 02-2666.

Respectfully submitted,

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